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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/804,965	ALBERTELLI ET AL.
	Examiner	Art Unit	
	Thomas M. Redding	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/2/2007*.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's response received on 11/2/2007 is fully considered herein. Claims 1-

24 are currently pending.

Claim Rejections - 35 USC § 101 (repeated from previous office action)

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101.

> ... a signal does not fall within one of the four statutory classes of Sec. 101.

> ... signal claims are ineligible for patent protection because they do not fall within any of the four statutory classes of Sec. 101.

Claims 18-24 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter as follows. While claim 18 and its dependent

claims 19-24 recite a "computer usable medium", the specification states "Common

forms of computer-readable or usable media include, for example, a floppy disk, a

carrier wave, or any other medium from which a computer can read" in the specification

at paragraph 25. While "functional descriptive material" may be claimed as a statutory

product (i.e., a "manufacture") when embodied on a tangible computer readable

medium, a carrier wave embodying that same functional descriptive material is neither a

process (i.e., a series of steps per se.) nor a product (i.e., a tangible "thing") and

therefore does not fall within one of the four statutory classes of § 101. Rather, "signal"

is a form of energy, in the absence of any physical structure or tangible material.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   Claims 1, 2, 4-9, 11-24 are rejected under 35 U.S.C. 102(b) as being anticipated

by Drisko et al. (US 5,933,523).

> Regarding claims 1, 11 and 18, Drisko working in the same problem solving area of identifying a rectangular region, teaches [a] method for detecting corners of a region ("In determining the location of the device, the corners of the device may be identified", Drisko, column 3, line 44), the method comprising the steps of:

detecting edges interior to a region of interest ("At 302, thresholding is

performed on the subsampled image data, and boundary features of the subsampled

image are extracted.", Drisko, column 5, line 53 and fig 3, and 4B, Drisko's Region of

Interest is the full view of the camera);

> culling the detected edges in order to obtain a reduced edge group from the detected edges, the reduced edge group comprising a plurality of points (Drisko, figure 4C and 4D, figure 5, block 503 – Remove Known Nozzle Points)
>
> selecting a plurality of candidate corner points (Drisko, Figures 4C and 4D); and
>
> detecting region corner points from the plurality of candidate corner points based on a predetermined relationship between each of the candidate corner points and characteristic edge points of the region of interest (Drisko, figure 5, block 502 – "Determine Extents", Drisko's region of interest is the full camera frame. Drisko teaches a local coordinate system that is fixed relative to the camera frame, which would include the corners and edges of his ROI. Distances are measured with respect to this coordinate system (minX, maxX, etc...). Therefore Drisko does detect corner points that are based on predetermined relationships with the corners and edges of the frame (ROI) as minimum and maximum points will still be minimum or maximum as measured from any point in the coordinate system (i.e. offsets change, but the relationship does not).I
>
> Regarding claims 2, 12 and 19, Drisko teaches the elements of claim 1 as given above wherein the step of detecting edges further comprises the step of applying an edge detection filter to an image of the region of interest ("a boundary feature extraction method is employed to identify boundary features", Drisko, column 6, line 13, and "an edge detector followed by a filter which detect edge contrast of illumination change", Drisko, column 6, line 28)

Regarding claims 4 and 14, Drisko teaches the elements of claim 1 as given

above. Drisko further teaches the step of selecting a plurality of candidate corner points

comprises the steps of:

obtaining a measure of cornerness for each one point from the plurality of points

(Drisko, column 6, lines 42-50);

selecting the plurality of candidate corner points from the plurality of points by

applying a predetermined criterion ("Once corresponding features are identified, they

are fit against model input 414D", Drisko, column 6, line 55).

Regarding claims 5, 13 and 20, Drisko teaches wherein the step of culling the

detected edges further comprises the step of masking selected areas interior to the

region of interest ("At 503, nozzle information is used to remove corner points

corresponding to known nozzle points. Nozzle information may be in the form of a model, or a list of points in the physical or image space. Conventional techniques such as masking or point-by-point comparison may be used to identify and remove corner points corresponding to the nozzle at this stage. Similarly, information related to other objects known to show up in the image may be used to remove corner points believed to correspond to those objects" Drisko, column 9, line 23).

Regarding claims 6, 15 and 21; Drisko teaches the method of claim 4 (as described above) wherein the step of selecting a plurality of candidate corner points further comprises the steps of:

comparing the measure of cornerness for each one point from the plurality of points to a predetermined threshold ("Geographic features are calculated with respect to the remaining corner points and compared against model constraints", Drisko, column 9, line 37);

selecting a point from the plurality of points as a candidate corner point if the measure of cornerness for said point is substantially equal to or greater than the predetermined threshold ("Corner points corresponding to geometric features falling outside of the model constraints are discarded", Drisko, column 9, line 39).

Regarding claim 7 and 22, Drisko teaches the region of interest is a substantially rectangular region of interest (Drisko, figure 7, Drisko's region of interest is the full view of the camera which is typically rectangular).

Regarding claims 8, 16 and 23, Drisko teaches determining, for each candidate corner point from the plurality of candidate corner points, a distance from said each candidate corner point to at least one characteristic edge point from a plurality of characteristic edge points of the substantially rectangular region of interest ("In this algorithm, x_{min}, x_{max}, y_{min} and y_{max} correspond to extents in the extents coordinate space. The index maxX.sub_i corresponds to the upper right corner of the chip, that given by minX.sub_i to the lower left corner, that given by maxY.sub_i to the upper left, and the that given by minY.sub_i to the lower right.", Drisko, column 9, line 9); and wherein said predetermined relationship comprises said distance.

Regarding claim 9, 17 and 24, Drisko teaches [t]he method of claim 8 further comprising the step of: determining whether the region is substantially located at an angle in relation to the substantially rectangular region of interest ("the illustrated CPL process may be used to determine other criteria such as the pose" and "The pose includes at least one of scaling parameters, rotational orientation, translation parameters, deformation parameters, morphing parameters, or any other transformational parameters", Drisko, column 9, line 62-67).

Regarding claims 18-24, Drisko additionally teaches a computer usable medium having computer readable code embodied therein, the computer readable code ("In

general, when implemented as a program or in part as a program, the program can be

encoded on any computer-readable medium", Drisko, column 4, line 40).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Drisko et al. (5,933,523) and Yokoi (US 2001/0022854 A1).

Regarding claim 3, Drisko teaches the elements of claim 1 and also teaches the

use of a filter to detect edges ("an edge detector followed by a filter which detect edge

contrast or illumination change" Drisko, column 6, line 28). Drisko does not specifically

teach an edge detection filter [that] comprises a Laplacian filter.

Yokoi, working in the same field of endeavor of address label processing ("a

recognition apparatus for recognizing sorting information as a character string written

within a cellophane region or label region of a paper-like material", Yokoi, paragraph 12

and Figs 3 and 6), does teach an edge detection filter [that] comprises a Laplacian filter

("The image [an edge component image] can be created by applying an operator of

Sobel, operator of Robinson, operator of Kirsch or Laplacian filter to the image of the

paper-like material S", Yokoi, paragraph 60).

It would have been obvious at the time the invention was made to one of ordinary

skill in the art to use the Laplacian filter of Yokoi, as the "filter which detects edge

contrast" as required by Drisko, because of the Laplacian's ability to create an edge

component image (Yokoi, paragraph 60), thus fulfilling Drisko's need. The use of a

Laplacian filter has long been well known in the art as an efficient, reliable and very

predictable device for detecting edges within an image.

Regarding claim 10, Drisko teaches the elements of claim 1 given above. Drisko

does not describe applying his technique where the region is an address label on a

delivery item.

Yokoi, does teach a recognition system which recognizes a region where the

region is an address label on a delivery item ("a recognition apparatus and recognition

method for recognizing sorting information (destination address) as a character string

written within a cellophane region or label region of a paper-like material, for example, a

postal matter and a paper-like material processing apparatus and paper-like material

processing method for sorting and processing the paper-like material based on the

sorting information recognized by the recognition apparatus." Yokoi, paragraph 2, also

figure 6-9).

It would have been obvious at the time the invention was made to one of

ordinary skill in the art to use the corner locating system of Drisko to process an

address label on a delivery item, in order to ignore extraneous elements on the items such as dirt or parts of the handling system ("One object of the present invention is to provide a system that detects article position using imaging techniques that reduce the effects of features in an image which do not correspond to the article." Drisko, column 3, line 16). It also provides a means for determining orientation.

Response to Arguments

1. Applicant's arguments filed 11/2/2007 have been fully considered but they are not persuasive.

Summary of Applicant's Remarks: Claims 18-24 should be allowable as patentable subject matter under 35 USC 101 as case law and the proposed interim guidelines all indicate a signal containing functional descriptive material is similar to a computer-readable memory encoded with functional descriptive material (see applicant's response pages 10 - 16).

Examiner's Response: Applicants arguments regarding the 35 U.S.C. 101 rejection have been considered and are moot in view of In re Petrus A.C.M. Nuijten; Fed Cir, 2006-1371, 9/20/2007, which is the basic for the current office policy.

Claims 18-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 18, and claims 19-24 by dependency, is drawn to functional descriptive material recorded on a computer usable medium having computer readable code embodied therein. Normally, the claim would be statutory. However, the specification, at page 11 defines the claimed computer readable medium as encompassing statutory media such as a "ROM", "hard drive", "optical drive", "punch cards", "paper tape", etc, as well as *non-statutory* subject mater such as a "signal" ("a carrier wave")

"A transitory, propagating signal ... is not a "process, machine, manufacture, or composition of matter." Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal cannot be patentable subject matter." (*In re Petrus A.C.M. Nuijten;* Fed Cir, 2006-1371, 9/20/2007).

Because the full scope of the claim as properly read in light of the disclosure encompasses non-statutory subject matter, the claim as a whole is non-statutory. The examiner suggests amending the claim to _include_ the disclosed tangible computer readable media, while at the same time _excluding_ the intangible media such as signals, carrier waves, etc. Any amendment to the claim should be commensurate with its corresponding disclosure.

Summary of Applicant's Remarks: Regarding claim 11, the limitations of claim 11

invoke 35 USC 112 paragraph 6. Drisko does not disclose structures equivalent to

structures in the specification.

Examiner's Response: The structure disclosed by the applicant is described in

applicant's specification in paragraph 7. "A system that implements the method of this

invention includes one or more processors and one or more

memories having computer code that causes the processor to

execute the method of this invention". It is this structure that provides the means for

each of the defined software elements in claim 11.

Drisko describes an equivalent structure ("As shown in FIG. 3B, a typical image

processor 304 includes an input device such as a camera 306. The image processor

304 also includes a processor such as CPU 308 and memory 310. The processor 308

may be a special purpose image processor or it may be a general purpose processor",

Drisko, column 4, line 25 and figure 3B).

Summary of Applicant's Remarks: Regarding claims 1 and 18, Drisko discloses

removing corner points but does not disclose culling detected edges. Drisko also does

not disclose "detecting region corner points from the plurality of candidate corner points

based on a predetermined relationship between each of the candidate corner points and

characteristic edge points".

Examiner's Response: Drisko does teach culling the detected edges in order to obtain

a reduced edge group from the detected edges, the reduced edge group comprising a

plurality of points; Drisko teaches "a boundary feature extraction method is employed to

identify boundary features along each surface of each region in the threshold image, as

shown in FIG. 4C which shows the boundary 410C of region 401B (of FIG. 4B) and the

boundary 412C of region 402B (of FIG. 4B)", (Drisko, column 6, line 13), Drisko is

removing or culling points from the edge of the boundaries found in an earlier step. As

seen in figure 4C, the extracted boundary features are a "reduced edge group

comprising a plurality of points".

If the applicant's intent is to cull entire edges rather than points within the edge,

examiner suggests amending the claim to that effect including changing the final clause

to indicate "a reduced edge group comprising a plurality of edges". However, even this

would require further search and consideration of the prior art.

Drisko also teaches detecting region corner points from the plurality of candidate

corner points based on a predetermined relationship between each of the candidate

corner points and characteristic edge points. Drisko teaches "Geographic features are

calculated with respect to the remaining corner points and compared against model

constraints (at 505). Corner points corresponding to geometric features falling outside of

the model constraints are discarded. For instance, corner point E4 is discarded in FIG.

6D because the distances from E4 to other corner points were not within the range

defined by the model input.", (Drisko, column 9, line 37). Drisko determines a set of

corner points from a larger set, his candidate corner points, by comparing against model

constraints, Drisko's model, describing the anticipated rectangle, provides a set of

characteristic edge points.

Summary of Applicant's Remarks: Regarding claims 4 and 14, Drisko does not apply

or disclose the concept of corner strength (A.K.A "cornerness" as would be understood

by one of ordinary skill in the art of image processing/computer vision.

Examiner's Response: The specification does not make a special definition of corner

strength, it only provides examples of specific cornerness algorithms, "Exemplary

measures of cornerness include, but are not limited to, the measures defined by Beus

and Tiu, Kitchen and Rosenfeld, Freeman and Davis, Rosenfeld and Johnston,

Rosenfeld and Weszka, and Zuniga and Haralick" (specification page 4). Claims 4 and

14 do not specify any particular cornerness algorithm. Therefore the corner strength

element cited in the claim can be interpreted broadly. Any algorithm that determines

corners, ranking one point over its neighbors would meet the limitation. Drisko teaches

a simple method of determining corners by ranking candidate points by distance

("These extents are determined by minimum and maximum x and y positions of all the

boundary points in the extents coordinate space", Drisko, column 8, line 49). The final

determinations are points that are selected on the min and max distances relative to an

axis. Drisko's algorithm provides a means of determining the cornerness of the points in the restricted point set.

If the applicant's intent is to claim specific cornerness algorithms, examiner suggests amending to construct claims citing specific algorithms. Alternatively, if the applicant intends to specify a class of cornerness algorithms, amend the claim to cite the specific elements required.

Summary of Applicant's Remarks: Regarding claims 5, 13, and 20, since Drisko does not disclose "detecting region corner points from the plurality of candidate corner points based on a predetermined relationship between each of the candidate corner points and characteristic edge points" as indicated above, Drisko does not disclose the added limitations of claims 5, 13 and 20.

Examiner's Response: Drisko does teach determining "detecting region corner points from the plurality of candidate corner points based on a predetermined relationship between each of the candidate corner points and characteristic edge points" as indicated above. Consequently, the original rejections of claims 5, 13 and 20 are maintained.

Summary of Applicant's Remarks: Regarding claims 8, 16 and 23, based on previous comments. Drisko does not disclose the added limitation of claims 8, 16 and 23.

Examiner's Response: Claims 8 and 16 depend from claim 1 and 11 which are addressed above. The original rejections of claims 8 and 16 are maintained. Claim 23 depends from claim 18 which is addressed above. The original rejections for claims 8, 16 and 23 are maintained.

Summary of Applicant's Remarks: Claims 2, 4-9 depend on claim 1, claims 12-17 are dependent on claim 11, and claims 19-24 depend on claim 18, thus claims 1-2, 4-9 and 11-24 are not anticipated by Drisko.

Examiner's Response: The rejections for claims 1, 11 and 18 are all explained above. The original rejections for claims 2, 4-9, claims 12-17 and 19-24 are maintained.

Summary of Applicant's Remarks: Regarding claims 3 and 10, as they are dependent upon claim 1 and Drisko does not disclose the elements of claims 1, claims 3 and 10 are not anticipated by the combination of Drisko and Yokoi.

Examiner's Response: The rejection for claim 1 is explained above. The original

rejections of claims 3 and 10 are maintained.

Conclusion

2.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Thomas M. Redding whose telephone number is (571)

270-1579. The examiner can normally be reached on Mon - Fri 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TMR/

BRIAN WERNER
SUPERVISORY PATENT EXAMINER